DEPRESSION IN MEDICALLY ILL GERIATRIC PATIENTS-A STUDY OF PREDICTIVE FACTORS.

Dissertation Submitted to

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

in partial fulfillment of the regulations

for the award of the degree of

M.D. (Psychiatry)

BRANCH – XVIII

MADRAS MEDICAL COLLEGE

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

CHENNAI, INDIA.

MARCH 2010

CERTIFICATE

This is to certify that the dissertation entitled “Depression in medically ill geriatric patients – A study of predictive factors” is the bonafide original work of **Dr. ARUN.V** in partial fulfillment of the requirements for **M.D. (Psychiatry) BRANCH–XVIII** Examination of the Tamilnadu Dr. M.G.R. Medical University to be held in March 2010. The period of study was from June to October 2009.

DEAN
Madras Medical College
Chennai-600 003.

Director
Institute of Mental Health
Chennai-600 010..

DECLARATION

I **Dr. ARUN. V** solemnly declare that the dissertation titled, **"DEPRESSION IN MEDICALLY ILL GERIATRIC PATIENTS – A STUDY OF PREDICTIVE FACTORS"** is a bonafide work done by me at Madras Medical College during 2006-2009 under the guidance and supervision of **Dr. R. SATHIANATHEN, M.D., D.P.M. M.P.H.,** Professor of Psychiatry, Madras Medical College.

The dissertation is submitted to Tamilnadu, Dr. M.G.R. Medical University, towards partial fulfillment of requirement for the award of

M.D. Degree (BRANCH – XVIII) in Psychiatry.

Place : Chennai.

Date :

(Dr. ARUN .V)

ACKNOWLEDGEMENT

I wish to thank immensely **Prof. Dr. J. Mohanasundaram, M.D., DNB., Ph.D.,** Dean, Madras Medical College, for giving me an opportunity to do this study.

My sincere thanks to **Prof. Dr. R. Sathianathan, M.D., D.P.M., M.P.H.,** Director, Institute of Mental Health, for his support and guidance given to me throughout the study.

My profound thanks to **Prof. Dr. B. Krishnasamy, M.D**., Head, dept of geriatric medicine for helping me during the study.

I am deeply indebted to **Prof. Dr. S. Nambi, M.D., D.P.M.** (retired) Addl prof of psychiatry Institute of mental health, without whose guidance and support, this study would have been a futile attempt.

I am grateful to **Dr. Vimal Doshi M.D.,** my mentor, for his thoughtful criticisms and encouraging words.

My special thanks to **Prof. Dr. Jeyaprakash M.D., D.P.M.** Addl prof of psychiatry Institute of mental health, for his valuable suggestions.

My sincere thanks to **Prof. Dr. Kalaichelvan M.D., D.P.M** Addl prof of psychiatry, Institute of mental health, for the interest he showed in my study.

I am also grateful to **Dr. Venkatesan PhD.,** H.O.D. Dept of statistics and **Mr**. **Srinivasan,** statistician, Indian council of medical research, Tuberculosis Research Centre, Chennai, for helping me with the statistical part of the study.

I would not tell thanks to my friends' **Dr. Sowmya Baskaran & Dr. Pradeep Menon,** because it is my privilege to keep it in the deepest part of my heart.

I would like to thank my **mother & sister** for their love, support, and understanding during the long years of my education.

I thank all the patients who participated in the study without whose cooperation; the study may not have been possible.

CONTENTS

INTRODUCTION

The word geriatrics is derived from the Greek word geron (old man) and latros (medical care). This means medical care of the elderly people. Geriatrics is concerned with people who are aged or aging, requiring medical care. Aging is a total constellation of social, psychological and biological changes that occur in later life.

Aging confronts the individual with physical and mental changes with changes in roles that have been central to view of oneself throughout life. The extent to which one can accept oneself and the part that determines one's happiness in later years and the degree with which one can face inevitability of disability and may be death.

Old age is a time of losses. It is a stage of life when an individual gradually or suddenly loses his vigor, physiological resources of body functions, occupation, friends and spouse or may be even independence.

Demographic ageing is a global phenomenon. India has a booming population of above one billion people; the second most populous country in the world and improved life expectancy have led to an increasingly large number of people over the age of 60. There are now 77 million elderly people in India and this number is expected to rise to 100 million in 2013 and to 198 million in 2030.

Both physical and psychiatric morbidity have been reported to be high among the elderly populations (Maguire et al 1968, Mehroa et al 1979, Venkoba Roa and Madhavan 1882). It has been estimated that 8.9% of elderly persons in India are having psychiatric illness in the geriatric age group (Ramachandran and Menon 1980; Venkoba Rao 1986).

Depression is the commonest psychiatric illness in the elderly and various factors unique to old age play a role in the occurrence of depression. Post (1972) commented that "every depressive attack is an individual affair. It is not infrequently characterized by different symptom complexes at different times during the life of the same person. On each separate occasion, the illness should be regarded as an individual affair multifactor ally compounded". This is particularly true for the elderly. Old age has been described as a 'season of loss' and depressive reactions as response to losses, including inevitable decline in physical vigor, mental agility, income, loss of loved ones.

Although various studies have been conducted in the west, to establish a relationship between various factors and depression occurring in old age, this area remains relatively unexplored by the Indian scientists, which is evidenced by the paucity of literature.

To summarize it can be said that the geriatric age group is a significant population subgroup, which is growing relatively rapidly. Elderly people have mental illness especially depression in sizeable numbers. As they age, they suffer from medical illnesses, physical disability resulting in dependence and

important life events. All these variables seem to interact in a complex way. Assessment of these variables may play an important role in management of depression as well as in health promotion and prevention of depression in this population.

Hence the present study proposes to study these three important variables namely life events, social support, disability in medically ill elderly people.

REVIEW OF LITERATURE

Emil Kreaplin called study of old age as the darkest area in psychiatry. Geriatric psychiatry has been described as a specialty in its youth and despite some spurts of growth during its formative years, it continues to have a stormy adolescence.

Available literature about interrelationship of disability, life events, and social support with depression in old age remains relatively unexplored in the Indian context.

Depression in old age

The process of growing old begins in adulthood and its repercussions can be seen in biological, sociological and psychological markers. The point at which one can be said to be old is unclear. The cut off is normally the age of retirement , thus 65 years is arbitrarily designated as beginning of old age or third age (Laslett, 1989). In the United States of America the social security act of 1935 established 65 years as the age of retirement (A report on the nation and its older people – U.S dept of health, education and welfare 1986). In terms of numbers, this was 15-20% of the population by the end of the century as compared to 5% at the beginning of the century.

Freud himself was not interested in psychological developments and changes consequent upon aging process although some of them were influenced by his ideas. Jung (1972) placed greater emphasis on the second half

of life and significant changes in that period. Mid life was a turning point, which afforded the individuals opportunities for new development. He laid much emphasis on introspection and symbolic and religious experiences in creating harmony within personality and between individuals and outside world. Erik Erikson (1956) too, in his "integrity v/s despair" has seen elder people as confronting a need to accept their lives- how they lived and also in order to accept their approaching death. They struggle to achieve a sense of integrity of coherence and wholeness of life, rather than give way to despair over the inability to relieve their lives differently. Peck (1968) maintained that psychological growth in old age is characterized by three psychological tasks.

1) Ego differentiation vs work role preoccupation; this focuses on the impact of vocational retirement and differences for many older people in securing a strong sense of identity and purpose in the absence of work. Personal work must be redefined so that a retired person can take satisfaction in activities and relationships beyond those of work. A sense of self worth derived from other activities and relationships beyond those of work. A sense of self worth derived from other activities is important for a vital interest in living.

2) Body transcendence versus body preoccupation; this task refers to an increased incidence in ill health in later years and its impact on psychological well being. The worst outcome is a preoccupation with their bodies.

3) Ego transcendence versus ego production; this is similar to Erickson's "integrity vs despair", which means to live fully knowing that death is inevitable.

Depression is the most common mood disorder in later life. Major depression occurs in at least 1% to 3% of the general elderly population, and an additional 8% to 16% of the elderly have clinically significant depressive symptoms (NIH Consensus development conference, Cole MG, Yaffe M J (1996), Blazer D (1996). In India depression is the commonest psychiatric illness in the geriatric age group (Ramachandran & Menon, 1980; Venkoba Rao 1986). Its prevalence is about 6.7% of elderly population (Venkoba Rao 1986). Charney et al (2003) commented that depression in late life have serious consequences, including disability, functional decline, diminished quality of life, mortality, from co morbid medical conditions or suicide. Because of the seriousness of these consequences, geriatric depression has been identified as a major public health problem, yet it is undiagnosed in 50% of cases (Mulsant and Ganguli 1999). In a randomized controlled study, 1226 individuals ages 60-75 were screened for depression; 396 were diagnosed with major depression, and 627 with no depression. Schucckit et al observed that 24% medical surgical patients over the age of 65 years had unrecognized major mental disorders, predominantly depression or alcoholism. Nandi et al did a study in two villages of west Bengal and assessed mental morbidity of the elderly population aged 60 years and above. 61% of them needed psychiatric treatment and a overwhelming majority of them were depressed.

Elderly in all cultures suffer from depression. A metanalysis by university of Liverpool found a 3.86% prevalence of depressed elderly in the people's republic of china, compared to 12%prevalance in Western Europe. Cultural differences are said to account for these differences. Despite these differences elderly in all cultures suffer from depression. Identification of various associated factors may help in health promotion and prevention. Thus there is a pressing need for studies that identifies potential social risk factors, physical health and disability as risk factors (Martin G Cole 2005). The following are some precipitating and relieving factors.

Precipitating factors (Robert Baldwin, 1999)

Acute stress

Life events

Bereavement

Acute physical illness

Separation

Medical illness or threat to life of someone close

Sudden homelessness or having to move in to an institution

Major financial crisis

Negative interaction with family member or friends

Loss of significant others

Chronic stress

Declining health and mobility; dependence

Sensory loss; cognitive decline

Housing problems

Major problems affecting family members

Marital difficulties

Socio economic decline

Problems at work; retirement

Caring for chronically ill and dependent family member

Protective (buffering) factors

General medical care

Correcting physical deficits (eg; sensory loss)

Optimizing general health

Good nutrition

Physical fitness

Coping behaviors

Adaptive integrated personality

Capacity for confiding relationship

Active coping styles to overcome adversity

Social supports

Adequate social network

Tangible social support

Positive perceptions of support

Confiding relationships

Religious / spiritual beliefs

Depression in medical illness

Geriatric depression occurs typically in the context of medical disorders. People over 65 account for twice the number of prescription drugs, one half times the number of physician contacts, and three times the number of hospital bed stays. Over half of the population that is 65 and older report having at least one chronic disability and a third report having chronic condition that is severe enough to limit their activities. In a study of prevalence of depressive disorder is 5-7%in the community, 8-12% among primary care patients and 10-30% among those with chronic illness (Katon.W 2003). In a population based sample of 4168 adults with diabetes, number of depressive symptoms strongly related to symptoms of depression and only weakly related to symptoms of severity (Ludman E J et al 2004)

Dunlop and colleagues (2004) studied 7,825 subjects ages 54-65 in a national probability sample and found a strong association between chronic illness and depression; only 3.6% of the subjects without chronic illness had major depression, but 9.9%-18.5% of the subjects with chronic illness had major depression. In the longitudinal Aging study. Amsterdam, Bisschop et al (2004) also found heart disease and arthritis to be most frequently associated with major depression. Caine et al 1994 reviewed literature and concluded that "medical illness emerges consistently as the most common clinical feature associated with depressive symptoms and diagnosis in community, outpatient and inpatient samples". The wide range of medical conditions, as well as hearing and visual deficits, which are associated with depression, suggests that the meaning of illness for the sufferer is as important as the precise body system involved (Murphy, 1982).

Depressed medical patients have more medical illness than non depressed patients. A study of primary care patients showed that the total mean number of medical diagnosis in depressed patients was 7.9 compared to 3.0 medical diagnoses in non depressed patients. Busse and Dovenmuehle 1959 found that depressed patients had significantly more physical illness than normals. This suggests that decline in physical function increases the likelihood of depression. It also interrupts many other pursuits and activities which ordinarily contribute to self esteem (Pfeiffer and Busse 1973). Benton et al, (2007) in a metanalysis found that depressive disorders are prevalent among

the medically ill and the relationship between depression and medical illness may be bi directional.

In a meta analysis of published literature Huang Chang-Quan (2009) found that poor self rated health and presence of chronic disease as a risk factor for depression in elderly (odds ratio 1.53)

Depression and disability in old age

According to world health organization, unipolar depression alone is responsible for 1 in 10 years lived with disability worldwide. Depression is among the 10 diseases that can increase disability adjusted life years (DALY). Rowan Harwood (1998) in a survey of people over age 65 in a defined geographical area found most potent influence on handicap are disease and disability.

Various authors have studied and found the association between depression occurring in late life and various factors, physical function (Alexopoulos et al., 1996; Bruce, 2001; Kennedy, Kelman et al 1990; Ormel et al 2002; Penninx & Leveille, 1999, Zeiss, Lewinsohn, Rohde &Seeley, 1996), poor self reported health status(Dorfman et al., 1995; Mulsant, Ganguli, & Seaberg, 1997), hospitalization (Huang et al., 2000), suicide (Turvey et al., 2002), and mortality (Penninx et al., 1999, 2001; Schoevers et al., 2001; Unutzer, Patrick, Marmon, Simon,& Katon, 2002). In a study of depressive symptoms among 180 older African-American women Sylvia E Furner et al (2006), found disability measured by IADL, and depressive symptoms as

measured by the center for epidemiological studies-depression scale, IADL was significantly associated with depressive symptoms (odds ratio=1.4). Zeiss, Antonette et al (1996) in a community based sample of older adults followed longitudinally found that functional impairment was a significant risk factor for depression.

In a cross sectional survey of all people over 65 years old Martin Prince et al found a strong association between disability measured by activities of daily living (ADL) and depression. In another cross sectional study, Iliffe et al assessed a random sample of 239 people aged 75 years and over and found a strong association between depression, loss of functional ability and depression. Nambi. S (1990) studied a group of patients attending the geriatric clinic, Govt General Hospital, Chennai, where the current study was conducted and concluded that depression in elderly is significantly associated with dependency and disability. In a longitudinal study of the oldest old (age > 85) Max El Stek (2006) found a higher incidence of depression and disability & institutionalization as an important predictor for depression.

In a postal survey of patients aged 65 and over in London the authors found that disability associated with illness, than illness per se, which are associated with depression (Harris .T et al).In a world metal health survey initiative, disability was measured by WHO disability assessment schedule, in 42, 697 adults in 17 countries, disability was found to be more strongly related to depression than chronic medical illness.

Depression and social support in old age

In early societies, older people were supported only so long as they could perform some sort of productive function. For eg if the Eskimos grandmother could no longer chew the hide for boots she would be abandoned (Donauche, Orbach, 1960). The advent of an agricultural society brought important developments – an economic surplus and the concept of property. During the era of industrialization, concerns regarding human efficiency led to studies of the physical and mental decline caused by aging. Old age was increasingly depicted as a period of decline, weakness, inactivity and dependency rather than wisdom and fulfillment.

Though burdened with years, economically devalued, socially blinkered, and physically disabled, the aged Indian is coveted to be the beneficiary of the Indian value system which prescribes respect, reverence and physical care for him from his children. This is believed to protect him from viscititudes that visit his contemporaries from the developed world and the industrialized countries (Venkoba Rao 1972). "Old age is something tremendously active at the level of thought and spiritual output which is why it has always been considered in India, a guide for the individual and the population" (Sanangelantonio1972). Nevertheless evidence has come forth from Asian countries with similar helpful attitudes towards old age that psychiatric morbidity and illness in elderly do not differ either in their incidence or nature from those in west (Lin 1953; WHO 1959).

Old age homes

Homes for the aged are by and large bleak, unkind places which sear the hearts of the aged and down their spirits. But these homes are becoming inevitable, though institutionalized elders have no social contacts at all. The home bound elders have more dignified position, better health, money – normally they prefer to stay with their families. Above everything else, the old need company and human warmth.

Home for the aged should be a 'home away from home', where shelter and affection should be available. With a new turn society takes, there are new cross roads- families expand and eventually break. The oldest members are the worst affected.

Old age was never a problem in India. Old age homes were alien in concept and elder abuse was considered a Western problem. As life expectancy has increased from 41 years in 1951 to 64 years today, hundreds of old age homes have sprung up in India. Neglect of parents has become a big issue, so much so that the Indian government has passed "The maintenance and welfare of parents and senior citizens bill 2006", which makes it imperative for adult children to look after their parents. State wise distribution of old age homes in India as of 2008.

Statewise Distribution of Old Age Homes in India

S.No	Name of the State	No. of Old Age Homes
1.	Andhra Pradesh	105
2.	Karnataka	55
3.	Tamil Nadu	55
4.	Orissa	52
5.	Uttar Pradesh	39
6.	West Bengal	38
7.	Manipur	25
8.	Assam	14
9.	Maharastra	12
10.	Madhya Pradesh	9
11.	Haryana	6
12.	Punjab	6
13.	Kerala	4
14.	Rajasthan	4
15.	Himachal Pradesh	3
16.	Pondicherry	3
17.	Tripura	3
18.	Uttranchal	3
19.	Bihar	2
20.	Nagaland	2
21.	Gujarat	2
22.	Chatisgarh	1
23.	Jammy & Kashmir	1

Life events and depression in old age

Life without stress cannot be imagined. Complete freedom from stress is death. Psychological Stressors form inseparable part of life, and up to a degree may be essential for adequate personality development.

It is assumed that the normal state of individual is one of homeostasis and that life events which requires change are crisis to the extent that they require time and energy to return to steady state of functioning. Stress is

assumed to be a mediator between an event and an adaptation to the event, causing damage to physical and psychological systems. An accumulation of life events in succession produces vulnerability for either development or precipitation of physical or psychiatric illness.

The concept that stressful life events predispose and precipitate illness is not new. One of ancient medical text "*SUSHRUT SAMHITA*" describes a kind of insanity 'shokja' after stressful life situation. Tuke, described dramatic life events, giving rise to several diseases, leading even to death by evoking strong emotions. Selye in his classical work postulated that any type of life change can act as a stressor causing psychological arousal and enhanced susceptibility to illness. Holmes and Rahe in 1967 invoked interest in this area by construction of an inventory "social readjustment scale', which led to a rapid growth of studies in this area.

A number of studies have revealed a clustering of events during the two year period preceding the onset of depression, a higher rate of accumulated distress from all events in their group of depressive patients compared with controls (Manison and Barchha 1967; Dunner and Fieve, 1978). It was found by foreign and Indian investigators that given a pause between the events, the individuals may have adapted to the events, the individuals may have adapted to the events, but a quick succession of events prevented coping (Paykel, Prusoff and Ulenhurth 1979, Venkoba rao and Nammalawar 1978' Chaterjee, Mukherjee and Nandi 1981). The distress score persisted at a higher level even after remission, there by indicating that the perception of the event in retrospect

remained unaltered. Paykel and Tanner in 1976 found that the relapse of depressive illness was preceded by stressful life events.

Controlled studies of depressed patients with regard to life events have been carried out in general population controls, depressed patients experienced three times more life events than controls in the preceding six months (Paykel and Lindenthal 1969) markedly threatening events during the preceding forty eight weeks (Browns et al 1973). Prakash, Trivedi and Sethi (1980) reported that depressives experienced numerically more events than schizophrenic controls. Hirscfield and Crors (1982) in an extensive review indicated that disturbing life events precede the onset of unipolar, bipolar illness and symptoms of dysphoric nature concluding that the life events act as risk factors for these states.

It is a common belief that endogenous depression occurs independently of external stressors. However Katsching and Egger – Zeider in 1986 concluded that the presence or absence of life event before the onset had no clear association with the type of depression (endogenous or non endogenous).

Some studies have found that the life events are more strongly linked to first episode of depression (Dolam et al 1985, Ghaziuddin and Stein 1990). These reports echo an early exploration were four or more episodes appeared to be related to a lowered rate of precipitating external events (Angest 1966). Frank et al (1994) reported that even among patients with a history of multiple role in the timing of onset of depressive episodes characterized by non

endogenous features. Brown and Harses 1994 in their studies found varied results concerning the role of stressful life events in endogenous depression. They suggested that it was too early to conclude that psychosocial factors are unimportant for the patients in the melancholic/ psychiatric group who were experiencing a subsequent episode.

AIMS AND OBJECTIVES

1. To study the role of disability as a predictive factor for depression in medically ill elderly population.
2. To study the role of social support as a predictive factor for depression in medically ill elderly population.
3. To study the role of stressful life events as predictive factor for depression in medically ill elderly population.
4. To study the various socio demographic factors associated with depression in medically ill elderly population.

HYPOTHESES

1) Disability is a predictor of depression in medically ill geriatric patients.
2) Stressful life events are a predictor of depression in medically ill geriatric patients.
3) Poor social support is a predictor of depression in medically ill geriatric patients.

Sample description

A randomly selected group of 100 patients attending both male & female outpatient clinics of the geriatric department of madras medical college, Chennai were included in the study.

50 male patients and 50 female patients were selected and interviewed.

Inclusion criteria

1) Age 65 and above and registered in the geriatrics dept.
2) Able to give informed consent.

Exclusion criteria

1) Critically ill patients.
2) Presence of any current psychiatric illness.

3) Cognitively impaired as assessed by Mini Mental State Examination (MMSE)

4) Uncooperative patients.

Study design

Patients fulfilling the inclusion criteria were clinically interviewed and thorough Mental status examination, was done to exclude other psychiatric illness and diagnosis of depression made using ICD 10, clinical descriptions and diagnostic guidelines. Other socio demographic details were collected using a semi structured schedule.

Tools used in the study

1) Semi structured schedule

2) Mini mental state examination (MMSE)

3) Geriatric depression scale(GDS30)

4) Multidimensional scale for perceived social support(MDPSS)

5) Presumptive stressful life events scale

6) Instrumental activities of daily living(IADL)

7) Hamilton rating scale for depression(HRDS 21)

Semi structured schedule

A semi structured schedule was used to collect relevant socio demographic information (age, sex, address, marital status, education, occupation, income, number of children staying with the patient) & relevant clinical information (physical illness, medications, duration).

Geriatric depression scale (GDS); (Yesavage et al 1983)

This scale was designed to measure depression in the aged primarily as a screening instrument. This scale consisting of 30 questions is a self administered questionnaire. Each question has a response in yes or no to indicate presence or absence of a particular feeling. Of the 30 questions, 20 indicate the presence of depression when answered positively and are given score one on responses 'yes' while other (Nos 1, 5, 7, 9, 15, 19, 21, 27, 29 &30) indicate depression when answered negatively and are given score 0 on response 'no'. A score of 0-10 indicates absence of depression and score of 11 or more indicates possible depression. This yielded a 84% sensitivity and 95% specificity rate.

Presumptive stressful life events scale (Gurmeet Singh et al 1984)

Developed by Gurmeet Singh, it was constructed and standardized for the Indian population. It is a standardization of social readjustment rating schedule by Holmes and Rahe. It is in the form of inventory of 51 items each item having a weighted stress score. For eg; death of spouse = 100, conflict over dowry= 51. The items are further categorized in to personal/impersonal &

desirable/undesirable or ambiguous events. It is administered in the form of semi structured interview, where in events are assessed as present or absent.

Multidimensional scale of perceived social support (MDPSS) (Zimet G.D., 1988)

The MDPSS was developed as a simple to use, brief scale of subjective assessment of adequate social support from 3 specific sources. Its simplicity & brevity makes it suitable for psychiatric and normal subjects who are not familiar with testing.

The subscale structure included are perceived social support from 3 sources, Family, friends, significant others.

The internal consistency of the total scale & subscale are high, ranging from 0.79 – 0.98 in various samples. It is free of social desirability bias. It is ideal for research assessment of multiple variables.

Mimi mental state examination (MMSE)

The Mini-Mental State Exam (MMSE) (Folstein et al. 1975) was originally designed to provide a brief, standardized assessment of mental status that would serve to differentiate between organic and functional disorders in psychiatric patients.

Description

The MMSE is a fully structured scale that consists of 30 points grouped into seven categories: orientation to place (state, county, town, hospital, and

floor), orientation to time (year, season, month, day, and date), registration (immediately repeating three words), attention and concentration (serially subtracting 7, beginning with 100, or, alternatively, spelling the word world backward), recall (recalling the previously repeated three words), language (naming two items, repeating a phrase, reading aloud and understanding a sentence, writing a sentence, and following a three-step command), and visual construction (copying a design).

MMSE cutoff score of 23 or 24 provides good sensitivity and specificity for the detection of dementia; however, several recent studies suggested that this cutoff score may be too low, particularly with highly educated individuals. These studies showed that dementia can be clinically diagnosed with good accuracy in many individuals who score between 24 and 27 on the MMSE. However, these figures are focused on accuracy in community populations. For clinical purposes, even a score of 27 may be insufficiently sensitive to detect dementia in individuals with extensive education, whereas a cutoff score of 24 may be insufficiently specific in individuals with little education.

Two studies that examined the internal consistency of the MMSE obtained Cronbach's alphas of 0.82 and 0.84 in elderly patients admitted to a medical service (N = 372) and elderly nursing home residents (N = 34), respectively. Numerous studies have shown that MMSE performance correlates with scores on scales that measure functional competence. One study found that activities of daily living (ADL) or instrumental ADL (IADL) scores were

significantly worse in patients who scored 23 on the MMSE than in those who scored <23 on the test.

Instrumental activities of daily living (IADL)

The Lawton Instrumental Activities of Daily Living Scale (IADL) is an appropriate instrument to assess independent living skills (Lawton & Brody, 1969). These skills are considered more complex than the basic activities of daily living as measured by the Katz Index of ADLs. The instrument is most useful for identifying how a person is functioning at the present time, and to identify improvement or deterioration over time. There are eight domains of function measured with the Lawton IADL scale. Women are scored on all 8 areas of function; historically, for men, the areas of food preparation, housekeeping, laundering are excluded. Clients are scored according to their highest level of functioning in that category. A summary score ranges from 0 (low function, dependent) to 8 (high function, independent) for women, and 0 through 5 for men. The Lawton IADL is an easy to administer assessment instrument that provides self-reported information about functional skills necessary to live in the community. Administration time is 10-15 minutes. Specific deficits identified can assist nurses and other disciplines in planning for safe discharge. Limitations of the instrument can include the self-report or surrogate report method of administration rather than a demonstration of the functional task. This may lead either to over-estimation or under-estimation of ability. In addition, the instrument may not be sensitive to small, incremental changes in function.

Hamilton Depression Rating Scale

First introduced by Max Hamilton in 1960, it has since become the most widely used and accepted outcome measure for evaluating depression severity. The Hamilton Depression Rating Scale is a 21-item scale that evaluates depressed mood, vegetative and cognitive symptoms of depression, and comorbid anxiety symptoms. It provides ratings on current DSM-IV symptoms of depression, with the exceptions of hypersomnia, increased appetite, and concentration/indecision. The 17-items are rated on either a 5-point (0-4) or a 3-point (0-2) scale. In general, the 5-point scale items use a rating of 0 = absent; 1 = doubtful to mild; 2 = mild to moderate; 3 = moderate to severe; 4 = very severe. A rating of 4 is usually reserved for extreme symptoms. The 3-point scale items used a rating of 0 = absent; 1 = probable or mild; 2 = definite. The HAMD was one of the first rating scales developed to quantify the severity of depressive symptomatology.

RESULTS

The statistical data obtained was analysed with the following aims

1) To find the association of various socio demographic variables with depression in medically ill elderly

2) Multiple regression equation assessed the independent contribution of each predictor on depression.

Total sample = 100

Included in study= 81

Total depressed=31(38.2%)

Total not depressed=50(61.7%)

Total number of depressed patients=31

Severity of depression

Mild = 11(35.4%)

Moderate = 10(32.2%)

Severe = 9(29%)

Table 1

Sex distribution

sex	Depressed		Non depressed		Total
	n	%	n	%	
male	9	29.0%	31	62.0%	40 49.4%
female	22	71%	19	38.0%	41 50.6%
total	31	100%	50	100%	

p value = 0.004 (significant)

Both group had comparable number of male and female. P value < 0.05 is taken as the significance level. The p value of 0.004 shows the difference found between male & female in the two groups is significant.

Table 2

Domicile

DOMICILE	DEPRESSED		NON DEPRESSED		TOTAL
	n	%	n	%	
URBAN	27	87.1	36	72	63 77.3%
RURAL	4	12.9	14	28	18 22.2%
TOTAL	31	100	50	100	

p value = 0.092 (not significant)

The difference between the two groups with regard to the domicile is not significant.

Table 3

Monthly income

INCOME	DEPRESSED		NOT DEPRESSED		TOTAL
	n	%	n	%	
NO INCOME	16	51.6%	35	70%	41 50.6%
< 1000	0	0%	2	4%	2 2.4%
1001-2000	2	6.4%	3	6%	5 6.1%
2001-3000	9	29%	4	8%	13 16.04%
>3000	4	12.9%	6	12%	10 12.3%
TOTAL	31	100	50	100	

p value = 0.109 (not significant)

The difference between the two groups with regard to the income is not significant.

Table 4

Past history of mental illness

PAST HISTORY	**DEPRESSED**		**NON DEPRESSED**		**TOTAL**
PAST H/O MENTAL ILLNESS	**n**	**%**	**n**	**%**	
	4	12.9%	2	4%	6 7.4%
NO PAST H/O MENTAL ILLNESS	27	87.1%	48	96%	75 92.6%
TOTAL	31	100	50	100	

p value = 0.293 (not significant)

Table 5

Marital status

MARITAL STATUS	DEPRESSED		NON DEPRESSED		TOTAL
	n	%	n	%	
MARRIED	22	71%	39	78%	61 75.3%
WIDOWED	7	22.6%	10	20%	17 21%
SINGLE/ UNMARRIED	2	6.5%	1	2%	3 3.7%
TOTAL	31	100	50	100	

p value = 0.546 (not significant)

Table 6

Religion

RELIGION	DEPRESSED		NON DEPRESSED		TOTAL
	n	%	n	%	
HINDU	27	87.1%	46	92%	73 90.1%
MUSLIM	0	0%	2	0%	2 2.5%
CHRISTIAN	3	9.7%	2	4%	5 6.2%
JAIN	1	3.2%	0	0%	1 1.2%
TOTAL	31	100	50	100	

p value = 0.272 (not significant)

Table 7

Type of family

TYPE OF FAMILY	DEPRESSED		NON DEPRESSED		TOTAL
	n	%	n	%	
NUCLEAR	22	71%	38	76%	60 74.1%
JOINT	9	29%	10	20%	19 23.5%
OLD AGE HOME	0	0%	2	4%	2 2.5%
TOTAL	31	100	50	100	

p value = 0.373 (not significant)

Table 8

Occupational status

OCCUPATION	DEPRESSED		NON DEPRESSED		TOTAL
	n	%	n	%	
WORKING	3	9.7%	5	10%	8 9.9%
NOT WORKING	28	90.3%	45	90%	73 90.1%
TOTAL	31	100	50	100	

p value – 0.639 (not significant)

Table 9

Educational status

EDUCATION	DEPRESSED		NOT DEPRESSED		TOTAL
	n	%	n	%	
PRIMARY/ ILLITRATE	17	54.3%	31	62%	48 59.2%
SECONDARY	12	38.7%	9	18%	21 25.9%
GRADUATION	2	6.4%	10	20%	12 14.81%
TOTAL	31	100	50	100	

p value = 0.058 (not significant)

There was no significant difference between case and control group with regard to educational status.

Table 10

Number of illness

NUMBER OF ILLNESS	DEPRESSED		NOT DEPRESSED		TOTAL
	n	%	n	%	
1	11	35.48%	31	62%	42 51.8%
2	15	48.38%	16	32%	31 38.27%
3	5	16.2%	3	6%	8 9.8%
TOTAL	31	100	50	100	

P value = 0.052 (not significant)

Table 11

Multiple regression for predictive factors

Variable	B	Std. Error	Beta	T value	sig	
	constant	17.287	8.566		2.018	.047
X1	MDPSS	-.193	.076	-.285	-2.545	.013
X2	IADL	-1.040	.912	-.127	-1.140	.258
X3	LIFE EVENTS	.121	.072	.191	1.674	.098

The regression equation is

Y = 17.287 + 0.193(x1) + 1.041(x2) + 0.121 (x3)

DISCUSSION

MULTIPLE REGRESSION FINDINGS

Multiple regression analysis considers the relation between combinations of 2 or more variables. Fundamentally regression technique involves manipulation of matrix data that is organized in columns and rows. The data in column are termed variables and those in rows are called observations.

Here the dependent variable (y) depression is predicted from linear combination of variables x1, x2, x3. The linear combination of variable is expressed as

Y 1 = a +b1x1+b2x2+b3x3- bkxk.

Where y1 is the predicted value of y

a is the constant

x1,x2 are variables

b1x1 are regression coefficient

Variable that are important in this combination will be associated with largest regression coefficients.

The strength of association between the predictors and the outcome will be associated with largest coefficients.

The strength of association between the predictors and the outcome is expressed as a correlation coefficient usually term multiple R. squaring R provides estimates of the amount of variance Y explained by the predictors XS.

Independent variables

Previous studies have found disability, poor social support, and stressful life events to be important predictors of depression in elderly (Martin G Cole 2005). These are taken as the independent variables.

Dependent variable

Depression was the dependent variable assessed. Geriatric depression scale was used to screen patients for depression and Hamilton rating scale for depression was used to assess the severity. The HAMD includes 21 items. Scores from 0-7 = none. 8-17 = mild, 18-25 = moderate. 26 and above = severe. It is an excellent instrument to assess depression even in old age (Micheal Bagby. R. 2004).

Among perceived social support measured by MDPSS, disability assessed by IADL, life events assessed by PLES, only perception of social support (p value 0.003), was found significant.

Life events were assessed using the presumptive stressful life events scale (PSLES).The score which is highest in the hierarchy is taken as the score for the individual. Contrary to our expectations stressful life events do not serve as a predictor (p value 0.444).

Disability assessed using IADL was not found to be a predictor of depression. (P value 0.258).

Our findings show that there is a significant association (p value 0.004) (Table 1) between sex and depression. Depression is more among females as compared to males. This is consistent with the findings of many authors (Blazer et al., 1991; Chen, Eaton, Gallo, Nested and Crum 2000; Dorfman et al., Ried and Planas, 2002). But this is in contrast with findings of Venkoba Rao et al., (1972), who found male to be at more risk for depression. He explains that women are continuously engaged in household works and their time is well filled and intrafamily attachment continues and hence they are less susceptible to depressive illness. But most of his sample was from a geropsychiatric clinic and our study sample from geriatric medical clinic. Hence this may explain the differences. Both clinicians and epidemiologists can expect women to be at higher risk of depression in similar settings.

When work status was considered more people from both depressed (90.03%) and non depressed group (90.1%) were not working and comparable in both groups (Table 8).chi square tests no significance with regard to occupational status (p value 0.0639). Mcleod & Kessler (1990) documented the

role of occupational status as coping resource, in stressful life situations, whereas Simon & West (1984) failed to find any role of occupational status. The present study finds no association between occupational status and depression im medically ill elderly.

The study centre predominantly serves the urban population which accounts for the fact that there are a higher percentage of people from urban setting in both case and control groups (Table 2). But the percentage of people from the urban setting was higher in the depressed (87%) than in the non depressed (72%). chi square test shows no significance difference between the two groups. Gerner (1989) reports the prevalence of depression to be higher in rural settings than in urban settings in non institutionalized patients. This difference can be because of the selective attendance of urban population in the study setting.

The percentage of widowed (22.6%) in depressed and (20%) in non depressed and married (71%) in depressed and (78%) in non depressed patients are comparable in both groups (Table 5). chi square test shows no significant difference between the two groups. The percentage of patients who are single in depressed (6.5%) is higher than in non depressed (2%). Gerner (1989) showed that incidence of depression was more in unmarried persons. Our study shows no significant difference between the two groups. It may be due to higher rates of marriage and lower divorce rates in the Indian population.

Table 2 shows that there is lesser number of depressed patients in no income group (51.6%) than in non depressed group (70%). This finding is contrary to expectations but Chi square test shows no significant difference between income groups. Gerner (1989) reported depression to be associated with lower socioeconomic status. This difference may be due to the fact that majority of the sample were in the no income group.

With respect to educational status, higher percentage of primary education or illiterate patients in non depressed group (62%) than in depressed group (54.3%). whereas there are a higher percentage of graduates in non depressed (20%) than in depressed (6.4%) (Table 9). Chi square test show no significance. Kessler (1990) found that educational status by itself works as a coping resource in old age. Further higher educational attainment is associated with other factors like upper socioeconomic status and urban residence etc…

When the patients with one medical illness are compared there is a higher percentage in non depressed (62%) than in depressed group (35.48%) (Table 10). Chi square test shows no significance between the two groups. This finding is consistent with findings of Nambi.S (1990), who in the same setting found no significant association with depression and number of medical illness.

Among the family types majority of the cases and controls are from nuclear families (Table 7).chi square test shows no significant difference between the two groups. Venkoba Rao (1972) found more number of elderly

patients came from nuclear family, which he argued reflects the changing trends in the family system.

Table 4 shows more number of people who had a previous episode of depression suffered from depression currently. But chi square tests show no significant difference between the two groups.

Multiple regression findings show stressful life events in the past six months not to be a significant predictor (p value 0.098) of depression. Literature shows contradictory findings on this issue. Rabkin & Streuning (1976) found low to moderate correspondence between life event score and subsequent emotional and physical disturbances. Chiriboga & Cuiter (1980) emphasized the need to take in to account the individual's definition of the event as positive or negative. Furthermore some authors have suggested that more than the stressful life events, the individual coping resources are important in mediating the role of such events in occurrence of depression.

Regression analysis shows disability is not a significant predictor of depression (p value 0.258). This is in contrast with studies that show functional disability as a important predictor of depression (Tess Harris et al.2003). This may be due to the fact that people with cognitive impairment were excluded from the study.

Regression analysis shows Perception of social support is a significant predictor of depression (p value 0.013). This is consistent with findings from previous literature which shows poor social support to be an important predictor of depression (Tess Harris et al 2003& 2006. Prince M. J 1998. Iliffe Steve et al 1991. David Russell & John Taylor 2009).

SUMMARY AND CONCLUSIONS

This is a cross sectional study where patients attending the geriatric clinic with medical illness were randomly selected and assessed for the presence of depression and the patients who were depressed and who were not depressed were compared with respect to various socio demographic factors and three important predictor variables namely stressful life events, social support and disability.

Our findings suggest that women are at more risk of depression than men, which is consistent with previous literature.

The study hypothesized that disability, social support and stressful life events are important predictors for depression in medically ill elderly. The study findings reveal that there is a poor perception of social support among the medically ill elderly, which serve as a important predictor for depression in this category.

So it can be concluded that organization of health services which integrates brief preventive interventions targeted at high risk groups will go a long way in alleviating the sufferings of this group of patients. Further studies which examine the protective factors need to be undertaken.

LIMITATIONS OF THE STUDY

1) The study is cross sectional in nature. Longitudinal studies are required to find out factors that predicts onset of depression.

2) The sample size is small.

3) The study is done in Govt general hospital, Chennai and may not represent the whole population.

4) Other important predictive factors like nature & severity of the medical illness were not assessed.

RECOMMENDATIONS

1 All elderly patients with medical illness should be screened for the presence of depression

2 There should be a holistic approach to the management of depression in this population group in which biosocial factors and socio demographic factors should be addressed.

3 Finally further work in this area should focus on the causal relationship between the risk factors and depression in elderly which will enhance our insight in to the associations demonstrated.

BIBLIOGRAPHY

Alexopoulos et al (1996). Disability in geriatric depression. American journal of psychiatry, 153, 877-885.

Benton T, Stabb J, Evans DL; Medical co-morbidity in depressive disorders; Ann Clin Psychiatry. 2007 oct-dec; 19(4);

Bissschop M I, Kriegsman DM, Deeg D J et al; the longitudinal relation between chronic diseases and depression in older persons in the community; the longitudinal Aging Study Amsterdam. J Clin Epidemiology 57; 187 – 194, 2004.

Bruce, M. L (2001) Depression and disability in late life; directions for future research. American journal of psychiatry,9,102-112.

Caine Ed, Lyness J.M, King D.A, et al; clinical ans etiological heteroginicity of mood disorders in elderly patients, results of NIH consensus development conference. American psychiatric association press 1994.

Charney D .S, Reynolds C.F 3rd, Lewis l, et al; Depression and bipolar support alliance consensus statement on the unmet needs in diagnosis and treatment of mood disorders in late life. Arch gen psychiatry 60; 664-672, 2003.

Chiriboga,. D. A and Cutler, L (1980). Stress and adaptation; life span perspectives. In aging in the 1980s: psychological issues, American psychological association, Washington D C.

David Russell, John Taylor: Living Alone and Depressive Symptoms: The Influence of Gender, Physical Disability, and Social Support Among Hispanic and Non-Hispanic Older Adults. The journals of gerontology. 2009.

Dolan R.J., Calloway S.P., Fonagy, P., DeSouza, F.Y.A., Wakeling A., Wakeling A., (1985) Life events depression and hypothalamic – pituitary-adrenal axis function. British journal of psychiatry 147.

Dorfman R., Lubben, J et al. (1995). Screening for depression among a well elderly population. Social work, 40, 295-304.

Dunlop D D, Lyons J S, Manheim LM, et al'; Arthritis and health disease as risk factors for major depression; the role of functional limitation. Med care 42;502-511, 2004.

Folstein MF, Folstein SE, McHugh PR: "Mini-Mental State": a practical method for grading the cognitive state of patients for the clinician. J Psychiatr Res 12:189–198, 1975

Garner R H (1989): Mood disorder, psychiatric disorders in late life. In Comprehensive text book of psychiatry, Kaplan & saddock b j Williams and wilkins.

Ghaziuddin,M, Ghaziuddin, N., and Stein, G. (1990); The role of life events in the onset of depression. First versus recurrent episode. Canadian journal of psychiatry, 35

Gurmeet singh, Dalbir k and Harsharan k (1984): PSLES (presumptive stressful life events scale)- a new stressful life event scale for use in India. Ind j psychiatry 26, 107

Hamilton, M. Hamilton depression rating scale (HRDS). A rating scale for depression. Journal of neurology, neurosurgery and psychiatry, 1960; 28; 56.

Hirrschfeld, R M and Cross G K (1982); Epidemiology of affective disorder. Archives of general psychiatry.139.

Holmes, T H and Rahe, R H (1967); The social readjustment rating scale, journal of psychosomatic research, 11, 213.

Huang Chang Quan et al.,. Health status and risk for depression among elderly. Age and ageing nov 2009

Katon W; Epidemiology of depression in medical illness, Biol psychiatry 2003; 54; 216-226.

Kay D.W.K. Beasmith P and Roth M (1964). Old age disorders (mental) in New Castle upon Tyne, British journal of psychiatry 110-146.

Kennedy, G., Kelman, et al (1990). The emergence of depressive symptoms in late life; the importance of declining health and increasing ability. Journal of community health, 15, 93-104.

Kessler, R. C (1979); A strategy for studying differential vulnerability to the psychological consequences of stress. Journal of health & social behavior, 20

Lawton, M.P., & Brody, E.M. (1969). Assessment of older people: Self-maintaining and instrumental activities of daily living. The Gerontologist, 9(3), 179-186.

Ludman EJ, Katon W, Russo J, et al. Depression and diabetes symptom burden. Gen Hosp Psychiatry. 2004; 26:430-436

Max El Stek, MD, PhD Natural history of depression in the oldest . British journal of psychiatry 2006, 188, 65-69.

Micheal Bagby.R. et al. .The Hamilton depression rating scale; has the gold standard become a lead weight? American Journal of psychiatry Dec. 2004

Muslant B H, Ganguli M; epidemiology and diagnosis of depression in late life. J clin psychiatry 60 (suppl 20); 9 – 15, 1999.

Muslant B., Ganguli, M., Seaberg, E. (1997). The relationship between self rated health & depressive symptoms in an epidemiological sample of community dwelling older adults. Journal of the American geriatrics society, 45, 954-958.

Nambi. S. (1990) cited in national seminar on problems of the aged & old age homes. Mumbai.

Nandi PS, Banerjee G, Mukherjee SP, et al. a study of psychiatric morbidity of elderly population of a rural community in West Bengal. Indian J Psychiatry 1997; 39:122-9.

Ormel, .J, Rijsdijk, F.V., et al(2002). Temporal and reciprocal relationship between IADL/ADL disability and depressive symptoms in late life. Journal of gerontology; psychological sciences, 57B, P338-P347.

Paykel E S, Dienelt M N, Lindenthal J.J(1969); Life events and depression; a controlled study. Archives of general psychiatry, 21

Paykel E S, Prusoff B. A and Ulenhuth E H (1971); Scaling of life events. Archives of general psychiatry, 25.

Pfeiffer. E Busse E W (1973)' Mental disorders in late life – affective disorders; in "*mental illness in later life* "Washington, American Psychiatric Association.

Population-based prospective study.*The British Journal of Psychiatry* (2006)

Prakash r, Trivedi J K, Sethi bb (1980); Life events in depression. Indian journal of psychiatry.

Rabkin J C & Struening E L, (1976): Life events, stress and illness science, 194.

Ramachandran and Saradha Menon A (1980). Depressive illness (eds) A. Venkoba Rao and S Parvathi Devi, Vaigai Achagam, Madurai, 59

Robert Baldwin; Aetiology of late life depression; Advances in psychiatric treatment (1999).

Selye H (1976); stress in health and disare Boston; Butter worth.

Sylvia E. Furner, Katrine Wallace et al; Twin study of depressive symptoms among older African – American women. Journal of gerontology 2006, vol61.

Venkoba rao & Nammalvar (1976). Life changes and depressive diseases. Indian journal of psychiatry, 18

Venkoba rao, A (1986); Depression in aged. In depressive disease, Indian council of medical research, New Delhi.

Venkoba rao, A. and Madhavan, T.(1982) Geropsychiatric morbidity survey in a semi urban area near Madurai, Indian journal of psychiatry.

Yesavage JA, Brink TL, Rose TL, Lum O, Huang V, Adey MB, Leirer VO: Development and validation of a geriatric depression screening scale: A preliminary report. *Journal of Psychiatric Research 17:*37-49, 1983.

Zeiss, Antonette M, Lewinsohn, Peter M, Rhode, Paul et al, Relationship of physical disease and functional impairment to depression in older people, Psychology and Aging Vol 11(4), Dec 1996, 572-581.

APPEXDIX I

SEMI STRUCTURED SCHEDULE

NAME

AGE

SEX

OCCUPATION

RELIGION

EDUCATION 1) PRIMARY

2) SECONDARY

3) GRADUATE

RESIDENCE 1) RURAL

2) URBAN

MONTHLY INCOME 1) NO INCOME

2) < 1000

3) 1001-2000

4) 2001-3000

5) >3000

MARITAL STATUS

1) WIDOWED

2) UNMARRIED

3) MARRIED

4) DIVORCED

TYPE OF FAMILY 1) JOINT

2) NUCLEAR

OLD AGE HOME

PAST H/O MENTAL ILLNESS

FAMILY H/O MENTAL ILLNESS

NUMBER OF CHILDREN 1 2 3 4

NUMBER OF MEDICAL ILLNESS 1 2 3 4……

DIAGNOSES

NUMBER OF MEDICATIONS

APPENDIX II

HAMILTON DEPRESSION RATING SCALE - 21 ITEMS

1. Depressed Mood (sadness, hopeless, helpless, worthless)

0 = Absent

1 = These feeling states indicated only on questioning

2 = These feeling states spontaneously reported verbally

3 = Communicates feeling states nonverbally (ie, through facial expression, posture, voice, and tendency to weep)

4 = Patient reports virtually only these feeling states in his spontaneous verbal and nonverbal communication

2. Feelings of Guilt

0 = Absent

1 = Self-reproach, feels he has let people down

2 = Ideas of guilt or rumination over past errors or sinful deeds

3 = Present illness is a punishment. Delusions of guilt

4 = Hears accusatory or denunciatory voices and/or experiences threatening visual hallucinations

3. Suicide

0 = Absent

1 = Feels life is not worth living

2 = Wishes he were dead or any thoughts of possible death to self

3 = Suicide ideas or gesture

4 = Attempts at suicide (any serious attempt rates 4)

4. Insomnia Early

0 = No difficulty falling asleep

1 = Complains of occasional difficulty falling asleep (eg, more than 1/2 hour)

2 = Complains of nightly difficulty falling asleep

5. Insomnia Middle

0 = No difficulty

1 = Patient complains of being restless and disturbed during the night

2 = Waking during the night – any getting out of bed rates 2 (except for purposes of voiding)

6. Insomnia Late

0 = No difficulty

1 = Waking in early hours of the morning but goes back to sleep

2 = Unable to fall asleep again if he gets out of bed

7. Work and Activities

0 = No difficulty

1 = Thoughts and feelings of incapacity, fatigue, or weakness related to activities, work, or hobbies

2 = Loss of interest in activity; hobbies or work – either directly reported by patient, or indirect in listlessness, indecision and vacillation (feels he has to push self to work or activities)

3 = Decrease in actual time spent in activities or decrease in productivity. In hospital, rate 3 if patient does not spend at least 3 hours a day in activities (hospital job or hobbies) exclusive of ward chores

4 = Stopped working because of present illness. In hospital, rate 4 if patient engages in no activities except ward chores, or if patient fails to perform ward chores unassisted

8. Retardation (slowness of thought and speech: impaired ability to concentrate, decreased motor activity)

0 = Normal speech and thought

1 = Slight retardation at interview

2 = Obvious retardation at interview

3 = Interview difficult

4 = Complete stupor

9. Agitation

0 = None

1 = Fidgetiness

2 = Playing with hands, hair, etc

3 = Moving about, can’t sit still

4 = Hand wringing, nail biting, hair-pulling, biting of lips

10. Anxiety Psychic

0 = No difficulty

1 = Subjective tension and irritability

2 = Worrying about minor matters

3 = Apprehensive attitude apparent in face or speech

4 = Fears expressed without questioning

11. Anxiety Somatic

0 = Absent

1 = Mild

2 = Moderate

3 = Severe

4 = Incapacitating

12. Somatic Symptoms – Gastro-intestinal

0 = None

1 = Loss of appetite but eating without staff encouragement. Heavy feelings in abdomen

2 = Difficulty eating without staff urging. Requests or requires laxatives or medication for bowels or medication

for GI symptoms

13. Somatic Symptoms General

0 = None

1 = Heaviness in limbs, back, or head. Backaches, headaches, muscle aches. Loss of energy and fatigability

2 = Any clear-cut symptoms rates 2

14. Genital Symptoms

Symptoms such as: Loss of libido, menstrual disturbances

0 = Absent

1 = Mild

2 = Severe

15. Hypochondriasis

0 = Not present

1 = Self-absorption (bodily)

2 = Preoccupation with health

3 = Frequent complaints, requests for help, etc

4 = Hypochondriacal delusions

16. Loss of Weight

0 = No weight loss

1 = Probable weight loss associated with present illness

2 = Definite (according to patient) weight loss

17. Insight

0 = Acknowledges being depressed and ill

1 = Acknowledges illness but attributes cause to bad food, climate, overwork, virus, need for rest, etc

2 = Denies being ill at all

18) Diurnal variation

A= note whether symptoms are worse in morning or evening.

0=no variation

1=worse in A.M

2=worse in P.M

B= When present mark the severity of variation.

0= none

1=mild

2=severe

19) Depersonalisation & derealization.

0= Absent

1=mild

2= moderate

3=severe

4=incapacitating.

20) Paranoid symptoms

0=none

1=suspicious

2= ideas of reference

3=delusion of reference & persecution.

21) Obsession & compulsive symptoms.

0=Absent

1=mild

2= severe

APPENDIX III

MINI MENTAL STATUS EXAMINATION

Score	Point	total
ORIENTATION		
1. What is the		
Year?		1
Season?		1
Date?		1
Day?		1
Month?		1
2. Where are we		
State?		1
Country		1
City?		1
Floor		1
Address/name of building?		1
REGISTRATION		
3. Name 3 objects: HOUSE,TREE,CAR(1second to say each). Now I want you to repeat them for me. (Score first try. Repeat objects until all are learned.		3
ATTENTION AND CALCULATION 4. A) Can you subtract 7 from 100, and then subtract 7 from the answer you to stop?		5

(Stop after 5 answers. Answers= 93, 86, 79, 72, 65) B) Ask the subject to spell the word “WORLD” backwards. The score is the number of letters in correct position. For example, “DLROW” is 5, “DLORW” is 3, “LRIWD” is 0. Greater score of A or B:		5
RECALL 5. Can you name the three objects I named before?		3
REPETITION Repeat the phrase ‘no ifs & buts’		1
NAMING Can u name these objects? Eg; wrist watch, pencil		2
COMPREHENSION Three stage command; eg; take the paper in your right hand, fold it in t half, put it on the floor		3
WRITING ‘Write a sentence of your own making’		1
READING Please read this and do what it says.’ Close your eyes’		1

VISUOSPATIAL Pls copy this picture		1
Total		30

Appendix IV

The Geriatric Depression Scale (GDS)

Choose the best answer for how you felt this past week
CIRCLE ONE

1. Are you basically satisfied with your life?	Yes	No
2. Have you dropped many of your activities and interests?	Yes	No
3. Do you feel that your life is empty?	Yes	No
4. Do you often get bored?	Yes	No
5. Are you hopeful about the future?	Yes	No
6. Are you bothered by thoughts you can't get out of your head?	Yes	No
7. Are you in good spirits most of the time?	Yes	No
8. Are you afraid that something bad is going to happen to you?	Yes	No
9. Do you feel happy most of the time?	Yes	No
10. Do you often feel helpless?	Yes	No
11. Do you often get restless and fidgety?	Yes	No

12. Do you prefer to stay at home, rather than going out and doing new things?	Yes	No
13. Do you frequently worry about the future?	Yes	No
14. Do you feel you have more problems with memory than most?	Yes	No
15. Do you think is wonderful to be alive now?	Yes	No
16. Do you often feel downhearted and blue?	Yes	No
17. Do you feel pretty worthless the way you are now?	Yes	No
18. Do you worry a lot about the past?	Yes	No
19. Do you find life very exciting?	Yes	No
20. Is it hard for you to get started on new projects?	Yes	No
21. Do you feel full of energy?	Yes	No
22. Do you feel that your situation is hopeless?	Yes	No
23. Do you think that most people are better off than you are?	Yes	No
24. Do you frequently get upset over little things?	Yes	No
25. Do you frequently feel like crying?	Yes	No
26. Do you have trouble concentrating?	Yes	No
27. Do you enjoy getting up in the morning?	Yes	No
28. Do you prefer to avoid social gatherings?	Yes	No
29. Is it easy for you to make decisions?	Yes	No
30. Is your mind as clear as it used to be	Yes	No
Total **(depressed)** answers		
Total score (No. of depressed answers)		

Appendix V

Multidimensional Scale of Perceived Social Support

Instructions: We are interested in how you feel about the following statements.
Read each statement carefully. Indicate how you feel about each statement.

Circle the “1” if you **Very Strongly Disagree**

Circle the “2” if you **Strongly Disagree**

Circle the “3” if you **Mildly Disagree**

Circle the “4” if you are **Neutral**

Circle the “5”if you **Mildly Agree**

Circle the “6” if you **Strongly Agree**

Circle the “7” if you **Very Strongly Agree**

1. There is a special person who is around when I am in need.	1	2	3	4	5
	6	7	SO		
2. There is a special person with whom I can share my joys and sorrows.	1	2	3	4	5
	6	7	SO		
3. My family really tries to help me.	1	2	3	4	5
	6	7	Fam		
4. I get the emotional help and support I need from my family.	1	2	3	4	5
	6	7	Fam		
5. I have a special person who is a real source of comfort to me.	1	2	3	4	5
	6	7	SO		

6. My friends really try to help me.	1	2	3	4	5
	6	7	Fri		
7. I can count on my friends when					
Things go wrong.	1	2	3	4	5
	6	7	Fri		
8. I can talk about my problems					
with my family.	1	2	3	4	5
	6	7	Fam		
9. I have friends with whom I can					
share my joys and sorrows.	1	2	3	4	5
	6	7	Fri		
10. There is a special person in my					
life who cares about my feelings.	1	2	3	4	5
	6	7	SO		
11. My family is willing to help me					
make decisions.	1	2	3	4	5
	6	7	Fam		
12. I can talk about my problems					
with my friends.	1	2	3	4	5
	6	7	Fri		

The items tended to divide into factor groups relating to the source of the social support, n

amely family (Fam), friends (Fri) or significant other (SO)

APPENDIX VI

Presumptive stressful life event scale

Rank on Mean Stress score	**Life events**	
1.	Death of spouse	95
2.	Extra marital relation of spouse	80
3.	Marital separation / divorce	77
4.	Suspension or dismissal from job	76
5.	Dobontion in jail of self or close family member	72
6.	Lack of Child	67
7.	Death of close family member	66
8.	Marital conflict	61
9.	Property or crops damaged	61
10.	Death of friend	60
11.	Robbery or theft	59
12.	Excessive alcohol or drug use by family member	58
13.	Conflict with in laws (other than dowry)	57
14.	Broken engagement or love affair	57
15.	Major personal illness or injury	55
16.	Son or daughter leaving home	55
17.	Financial loss or problems	54
18.	Illness of family member	52
19.	Trouble at working with colleagues / superior or subordinates	58
20.	Prophecy of astrologer or palmist etc.	52

21.	Pregnancy of wife (wanted or unwanted)	51
22.	Conflict over dowry (Self or Spouse)	51
23.	Sexual problems	51
24.	Self or family member unemployed	51
25.	Lack of son	51
26.	Large loan	49
27.	Marriage of daughter / dependent sister	49
28.	Minor violation of law	46
29.	Family conflict	47
30.	Break up with friend	47
31.	Major purchase or construction of house	46
32.	Death of pet	51
33.	Failure in examination	43
34.	Appearing for an exam or interview	43
35.	Getting married and engaged	43
36.	Trouble with neighbor	40
37.	Unfulfilled commitments	40
38.	Change of residence	39
39.	Change of residence	37
40.	Outstanding personal achievement	37
41.	Begining or end of schooling	36
42.	Retirement	35
43.	Change in working conditions or transfer	33
44.	Change in sleeping habits	33

45.	Birth of daughter	30
46.	Gain of new family member	30
47.	Reduction in no; of family function	29
48.	Change in social activities	28
49.	Change in eating habits	27
50.	Wife begins or stops work	25
51.	Going on pleasure trip or pilgrimage	20

APPENDIX VII

INSTRUMENTAL ACTIVITIES OF DAILY LIVING SCALE (IADL)

A. Ability to use telephone

1. Operates telephone on own initiative; looks up and dials numbers, etc. 1
2. Dials a few well known numbers 1
3. Answers telephone but does not dial 1
4. Does not use telephone at all. 0

B. Shopping

1. Takes care of all shopping needs independently 1
2. Shops independently for small purchases. 0
3. Needs to be accompanied on any shopping trip 0

C. Food Preparation

1. Plans, prepares and serves adequate meals independently. 1
2. Prepares adequate meals if supplied with ingredients. 0
3. Heats, serves and prepares meals or prepares meals but does not maintain adequate diet. 0
4. Needs to have meals prepared and serves 0

D. Housekeeping

1. Maintains house alone or with occasional assistance (e.g “heavy work domestic help”) 1
2. Performs light daily tasks such as dish washing, bed making 1
3. Performs light daily tasks but cannot maintain acceptable level of cleanliness. 1
4. Needs help with all home maintenance tasks. 1

5. Does not participate in any housekeeping tasks. 0

E. Laundry

1. Does personal laundry completely. 1
2. Launders small item; rinses stockings, etc 1
3. All laundry must be done by others. 0

F. Mode of Transportation

1. Travels independently on public transportation or drives own car. 1
2. Arranges own travel via taxi, but does not otherwise use public transportation. 1
3. Travels on public transportation when accompanied by another. 1
4. Travel limited to taxi or automobile with assistance of another. 0
5. Does not travel at all. 0

G. Responsibility for own medications.

1. Is responsible for taking medication in correct dosages at correct time. 1
2. Takes responsibility if medication is prepared in advance in separate dosage 0
3. Is not capable of dispending own medication. 0

H. Ability of Handle Finances

1. Manages financial matters independently (budget, writes checks, pays rent, bills goes to bank) collects and keeps track of income. 1
2. Manages day to day purchases, needs help with banking major purchases etc. 1
3. Incapable of handling money 0